

**Notice of Allowability**

Application No.

10/826,056

Applicant(s)

ISLAM ET AL.

Examiner

Art Unit

Thanhha Pham

2813

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/28/2006.
2. ☒ The allowed claim(s) is/are 1-9, 12-21, 24, 43-57.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)           |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance             |
|   | 9. <input type="checkbox"/> Other _____   |

  
THANHHA S. PHAM  
PRIMARY EXAMINER

## DETAILED ACTION

This Office Action is in response to Applicant's Amendment dated 6/28/2006.

### ***Allowable Subject Matter***

1. Claims 1-9, 12-21, 24, and 43-57 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:
  - Recorded Prior Art fails to disclose or suggest combination structure of imprinting apparatus as cited in claim 1 including the trench vertical sidewalls aligned with (111) vertical lattice planes of the semiconductor substrate, a plurality of vertical structures disposed in the trench between the trench vertical sidewalls, a material of the vertical structures being different from a material of the semiconductor substrate wherein the plurality of the vertical structures being spaced apart from each other and from the trench vertical sidewalls to form a mold that provides a pattern for imprinting.
  - Recorded Prior Art fails to disclose or suggest combination structure of imprinting apparatus as cited in claim 13 including: sidewalls of a trench etched in the semiconductor substrate along spaced apart (111) vertical lattice planes such that the trench sidewalls are (111) vertical planes; and a plurality of vertical structures disposed in the trench, the vertical structure being nano-scale space apart and spaced from the trench sidewalls, a vertical structure of the plurality having opposing sides and an end, a side of the vertical structure facing one of a side of an adjacent vertical structure and a

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trench sidewall, the end having a horizontal surface coplanar with the (110) planar surface of the semiconductor substrate, a material of the plurality of vertical structure being different from a material of the semiconductor substrate wherein the plurality of vertical structures between the trench sidewalls provide a nano-scale patterned for nano-imprinting.

► Recorded Prior Art fails to disclose or suggest combination structure of imprinting apparatus as cited in claim 50 including: a substrate that is a semiconductor polished in a [110] direction, the substrate having a trench with sidewall that are vertical, the sidewalls being aligned with (111) vertical lattice planes of the substrate; a plurality of vertical structures disposed in the trench between the sidewalls, a material of the vertical structures being distinct from a material of the substrate wherein the vertical structure are spaced apart from each other and from the sidewalls of the trench to form a mold that provides a pattern for imprinting.

► Recorded Prior Art fails to disclose or suggest combination structure of imprinting apparatus as cited in claim 54 including a semiconductor substrate polished in a [110] direction, the semiconductor substrate having a trench with sidewalls that are vertical, the sidewalls being aligned with [111] vertical lattice planes of the semiconductor substrate, a plurality of vertical structures disposed in the trench between the sidewalls; alternating layers of a first material and a second material in the trench, the second material layers being portions of the vertical structures, the first material being different from the second material.

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3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanhha Pham whose telephone number is (571) 272-1696. The examiner can normally be reached on Monday and Thursday 9:00AM - 9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TSP



THANHHA S. PHAM  
PRIMARY EXAMINER

7/14/06